PCE/471/85

International
Marketing Information
Series

Country Market Survey

NEWARK PUBLIC LIBRARY
MAR 10 1986
U. S. GOVT. PUBS.
DEPOSITORY 375

Pollution Control Instrumentation and Equipment

Portugal

U.S. DEPARTMENT OF COMMERCE
International Trade Administration

C61.9:

Portugal

CMS/PCE/471/85, December 1985

CMS

READEX FICHE best copy available

The Portuguese market for pollution control instrumentation and equipment, though still small, is expected to show steady growth as the country prepares for entry into the European Economic Community (EEC) later in the 1980's. Sales leaped more than 25 percent to $22.5 million[1] in 1981, and despite a slowdown in subsequent years, are expected to reach $34.5 million in 1987, representing average expansion of 7.4 percent per annum over the 1981-87 period (see table 1). Portuguese industrial plants will have to bring their pollution control expenditures into line with those of other EEC members to avoid charges of unfair competition. Moreover, Portugal must maintain a clean, attractive environment to ensure the continued health of its booming tourist industry. U.S. firms captured about 7 percent of this import-dominated market in 1981, and are forecast to boost their sales to some $2.8 million by 1987 (see table 2). American instrumentation is considered well-suited to several large projects that are shaping demand for pollution control hardware over the next few years.

Although Portugal has enacted numerous decrees addressing specific environmental issues, it still has no unifying pollution control legislation. A recently formed Government Department is charged with maintaining the quality of life, but it evidently lacks the power to integrate pollution control responsibilities of other agencies such as the Ministries of Industry and of Fisheries. Nevertheless, a growing awareness of pollution problems exists, and action is constrained less by a lack of desire than by a lack of resources. A massive industrial development at Sines, for example, incorporates explicit pollution control requirements. In addition, the demands of the tourist industry are widely recognized as requiring stricter control efforts. Local authorities, too, are forming administrative departments to study environmental problems.

Amounting to $6 million in 1981, the market for pollution control instruments is expected to grow at a 10 percent annual pace, to nearly $10.5 million in 1987. For most Portuguese municipalities and smaller factories, use of instrumentation is minimal, and much of the demand comes from studies, financed by pre-EEC accession funds, to determine the current status of environmental problems. In addition, the chemical complex and associated infrastructure being built at Sines are expected to require instrumentation to measure effluents through the project's completion in the 1990's. No instrumentation is manufactured locally, so imports must supply the entire market.

Given the low level of technology of most pollution control installations in Portugal, it is not surprising that equipment sales account for over two-thirds of the instrumentation and equipment market. Purchases of equipment totaled $16.5 million in 1981, and are foreseen rising to $24 million by the end of the 1981-87 period. Major sewage treatment facilities are under construction for Lisbon, and planned for Sines and Oporto. Equipment spending is also planned to ensure clean air in the tourist areas of the Algarve and to improve solid waste management in cities all over the country. Despite the presence of a small local pollution control equipment manufacturing industry, foreign vendors are expected to supply more than 95 percent of the market through 1987.

Competitive Assessment by Functional Category

Domestic manufacture in 1981 was limited to $500,000 worth of wastewater treatment equipment, primarily small filter assemblies. Imports supplied the remaining 98 percent of the market, a share that is not expected to shrink substantially by 1987. U.S. firms face stiff competition from EEC-based businesses, but still do well with selected instruments and equipment. U.S.-source shipments amounted to nearly $1.6 million in 1981 and are expected to advance at a brisk 10 percent annual pace through 1987, when they should account for 8 percent of the market.

Wastewater treatment.—Valued at $10.5 million, sales of equipment and instrumentation for treating wastewater made up nearly half the Protuguese market in 1981 (see table 3). Water is scarce in Portugal, and pollution of the rivers that provide the country with most of its water needs poses a growing concern to public officials. Steps to curtail both domestic and industrial water pollution are expected to generate 7 percent annual increases in the market, to $16 million

Table 1. Portugal.—The market[1] for pollution control instrumentation and equipment, 1980, 1981, and projected 1987
(in thousands of U.S. dollars)

	1980	1981	1987
Instrumentation			
Production	—	—	—
Imports	4,485	6,200	10,450
Exports	135	200	—
Market size	4,350	6,000	10,450
Equipment			
Production	500	500	1,000
Imports	12,490	16,010	23,000
Exports	1,090	40	—
Market size	11,900	16,470	24,000
Total			
Production	500	500	1,000
Imports	16,975	22,210	33,450
Exports	1,225	240	—
Market size	16,250	22,470	34,450

[1] Size of market equals production (ex factory value) plus imports (c.i.f.) minus exports (f.o.b.).

Source: Bank of Portugal Monthly Statistical Bulletin and International Trade Administration, Office of Information Product Development and Distribution research report, "The Market for Pollution Control Equipment—Portugal" (see Additional Information box).

[1] All values are shown in U.S. dollars. Local currency data are converted at the following exchange rates: US $1 = 50.06 Escudos (1980), 61.55 Escudos (1981), and 85.47 Escudos (1982 and subsequent years). Values for years through 1981 are expressed in current rather than constant dollars/prices; values for 1982 and subsequent years are expressed in 1981 constant dollars/prices.

in 1987. All but one-sixteenth of purchases will be made from foreign vendors.

Instrumentation made up only one-fourth of the combined wastewater treatment instrumentation and equipment market in 1981, yet accounted for over 40 percent of all instrumentation applications. From $2.5 million in 1981, wastewater treatment instrumentation sales are projected to climb some 10 percent a year, to $4.5 million in 1987. A wide range of monitoring and measuring equipment is being employed by the central Government and by municipalities in numerous river studies currently in progress or recently completed. Some of the larger cities are contemplating the creation of sanitation labs, and many industries will eventually be required to monitor and record effluent outfalls.

American firms supplied 14.4 percent of imports of wastewater instrumentation in 1981 and, through the activities of Foxboro's U.K. operation, Foxboro-Yoxhall, may also play a role in the share of imports captured by British-sourced shipments. By 1987, American vendors are projected to sell $810,000 worth of instrumentation, representing 14.5 percent average annual growth during 1981-1987 and boosting the U.S. share to 18 percent in 1987. Prominent U.S.-based suppliers include Martek, which sells water quality analyzers, and Manning, which offers flow meters and sampling systems and sedimentation samplers.

Strongest third-country competition comes from the United Kingdom, which shipped $500,000 worth of water instrumentation to Portugal in 1981. In addition to the Foxboro subsidiary, leading vendors include Tinsley and Melling & Arden. Among the French firms active on the market is Omnium, a vendor of water analyzers. French sales totaled some $250,000. Other active third-country rivals include companies from Germany (including Hartmann & Braun and Menzel), the Netherlands (Philips), and Switzerland (Hoch & Tiefbau).

The market for wastewater treatment equipment, the largest of any category surveyed, amounted to $8 million in 1981, and is forecast to rise to $11.5 million by 1987. Despite the modest level of expenditure, the need for wastewater treatment is growing. Local environmental scientists have identified more than 12,000 industrial plants discharging untreated effluent into Portugal's waterways. Many of these plants will have to take steps to begin treating their wastes once Common Market entry becomes a reality. In addition, virtually all municipalities have considered their requirements for wastewater treatment. Several large urban areas, notably Lisbon, Oporto, and the cities of the Algarve, are studying new sewage collection and treatment facilities. Lisbon has already gone out for bids on its new system. Smaller municipalities are keenly interested in compact packaged treatment systems.

Table 2. Portugal.—Imports of pollution control instrumentation and equipment by country of origin, 1980, 1981, and projected 1987
(in thousands of U.S. dollars)

	1980	1981	1987
Wastewater treatment			
Instrumentation			
United States	240	360	810
United Kingdom	600	500	
France	200	250	
Germany	200	220	
Germany	200	220	
Others	760	1,170	
Total	2,000	2,500	4,500
Equipment			
United States	—	—	—
France	2,450	3,600	
Germany	1,620	2,000	
United Kingdom	1,250	1,600	
Others	680	300	
Total	6,000	7,500	10,500
Air pollution			
Instrumentation			
United States	160	210	420
United Kingdom	120	150	
France	80	100	
Germany	75	100	
Others	350	440	
Total	785	1,000	1,500
Equipment			
United States	170	200	290
United Kingdom	890	1,110	
France	250	350	
Others	480	600	
Total	1,790	2,260	3,200
Noise pollution			
Instrumentation			
United States	290	390	580
United Kingdom	185	230	
Germany	140	175	
Others	235	305	
Total	850	1,100	1,700
Equipment			
United States	50	75	115
Germany	410	550	
United Kingdom	180	270	
Others	310	505	
Total	950	1,400	2,100
Solid and semisolid wastes			
Hazardous wastes			
Instrumentation			
United States	—	100	250
United Kingdom	—	150	
Germany	—	50	
Others	—	200	
Subtotal	—	500	1,000
Equipment			
United States	—	—	—
France	—	—	
United Kingdom	—	—	
Germany	—	—	
Others	—	—	
Subtotal	—	—	500
Nonhazardous wastes			
Instrumentation			
United States	150	255	350
United Kingdom	210	250	
France	120	155	

Germany	125	120	
Others	245	320	
Subtotal	850	1,100	1,750
Equipment			
United States	—	—	—
France	1,450	1,650	
United Kingdom	825	1,400	
Germany	865	1,300	
Others	610	500	
Subtotal	3,750	4,850	6,700
All solid and semisolid wastes			
Instrumentation			
United States	150	355	600
United Kingdom	210	400	
Germany	125	170	
France	120	155	
Others	245	520	
Total	850	1,600	2,750
Equipment			
United States	—	—	—
France	1,450	1,650	
United Kingdom	825	1,400	
Germany	865	1,300	
Others	610	500	
Total	3,750	4,850	7,200
Total imports	16,975	22,210	33,450
Total from the U.S.	1,060	1,590	2,815
U.S. percent share	6	7	8

Source: Bank of Portugal Monthly Statistical Bulletin.

Though the level of technology remains low, almost all wastewater treatment equipment is imported. Local production of simple items is expected to rise to $1 million by 1987, when it will account for almost 9 percent of sales. U.S. firms have been unable to penetrate this market, and are not expected to do so by 1987. They face stiff competition from European vendors, especially French firms, which account for almost 50 percent of imports. France's Degremont has established itself as an industry leader, often pulling together a consortium or shopping around among other equipment suppliers when bidding on Portugese contracts.

British suppliers provided wastewater treatment equipment worth $1.6 million in 1981. Prominent vendors include Klargester (Packaged systems), C.J.B. Developments (biological treatment), Whitehead & Poole (solids separation), and Longwood Engineering (solids separation). Companies from Germany also do well in this market, accounting for 27 percent ($12 million) of imports in 1981.

Air pollution.—The market for air pollution control instrumentation and equipment is expected to advance some 6.5 percent per annum over the 1981-87 period, from $3.2 million in 1981 to $4.7 million in 1987. Despite the relatively low density of urban and industrial development in Portugal, air pollution is recognized as a growing problem, especially when it conflicts with the demands of the tourist industry for scenic beauty and clean air.

At $1 million, instrumentation made up about one-third of the combined air pollution instrumentation and equipment market in 1981. Scientific studies of air pollution patterns are currently generating most of the demand. In addition, air pollution monitoring has been initiated in the Lisbon area and at the Sines industrial complex. By 1987, sales of instrumentation are forecast to reach $1.5 million. Imports, which supply the entire market, include U.S.-source shipments of $210,000. American vendors were the leading providers of instrumentation in 1981, and they are projected to double their sales over the 1981-87 period, accounting for 28 percent of imports in the latter year.

Third-country rivals include companies in France, the United Kingdom, and Germany. French competitors include MSA, which does well with leakage detectors, and Omnium Scientifique, offering air analyzers. Germany's Hartmann & Braun succeeds with devices for monitoring volume, pressure, and emission quality.

The $2.2 million market for air pollution control equipment in 1981 is projected to expand to $3.2 million by the end of the 1981-87 period. According to trade sources, Portugal has made a start on combating point-source air pollution, particularly at the Sines complex, among some of the larger cement manufacturers, and in the energy generating industry. Equipment for particulate emission control represents

Table 3. Portugal.—Sales[1] of instrumentation and equipment by functional area, 1980, 1981, and projected 1987
(in thousands of U.S. dollars)

	1980	1981	1987
Wastewater treatment			
Instrumentation	2,000	2,500	4,500
Equipment	6,500	8,000	11,500
Total	8,500	10,500	16,000
Air pollution			
Instrumentation	750	1,000	1,500
Equipment	1,750	2,220	3,200
Total	2,500	3,220	4,700
Noise pollution			
Instrumentation	850	1,100	1,700
Equipment	900	1,400	2,100
Total	1,750	2,500	3,800
Solid and semisolid wastes			
Hazardous wastes			
Instrumentation	—	500	1,000
Equipment	—	—	500
Subtotal	—	500	1,500
Nonhazardous wastes			
Instrumentation	750	900	1,750
Equipment	2,750	4,850	6,700
Subtotal	3,500	5,750	8,450
All solid and semisolid wastes			
Instrumentation	750	1,400	2,750
Equipment	2,750	4,850	7,200
Total	3,500	6,250	9,950
TOTAL	16,250	22,470	34,450

[1] Sales are equivalent to market size, which is domestic production (ex. factory value) plus imports (c.i.f.) minus exports (f.o.b.).

Source: Bank of Portugal Monthly Statistical Bulletin and International Trade Administration, Office of Information Product Development and Distribution research report, "The Market for Pollution Control Equipment—Portugal" (see Additional Information box).

almost three-fourth of this equipment market. Industry analysts explain that the cement industry will have to adopt tighter particulate control measures when Portugal gains entry to the EEC. Moreover, a number of cities are planning to use incineration to handle solid wastes, thus necessitating installation of equipment for controlling particulate emissions.

American suppliers make their most significant sales of any kind of pollution control equipment with devices for controlling particulate emissions. In 1981, U.S. vendors sold Portugal $200,000 worth of air pollution equipment, with equipment for particulate emission control accounting for 80 percent of the total. By 1987, American-sourced shipments of particulate control equipment are projected at $240,000. U.S. sales of gaseous emission control equipment, on the other hand, are only expected to climb from $40,000 to $50,000 over the 1981-87 period. Leading U.S. vendors of air pollution control equipment include Bendix, which markets a broad product line. In addition, Lodge Cotterell does well with fume scrubbers, and Sturtevant provides fume incinerators.

U.K.-based firms captured about half the market in 1981. Prominent suppliers include Peabody Galion (scrubbers, precipitators, filters, chimneys, blowers, incinerators); Bahco (cyclone units, scrubbers, filters, wet-collectors); and Improvair (gas and odor filter media). Other third-country rivals include Germany's Mikropul (particle size reduction equipment) and Walther (precipitators, bag houses), as well as the French firms Braillon (fume exhaust plants) and Recuperation Thermique (gas cleaning equipment).

Solid, semisolid, and hazardous wastes.—Most of the $6.25 million market for instrumentation and equipment for handling solid and semisolid waste is based on the need to manage nonhazardous materials. From $5.75 million in 1981, sales of nonhazardous waste instrumentation and equipment are projected to climb to $8.45 million in 1987 as municipalities grapple with the collection and disposal of domestic refuse.

U.S. firms achieve their limited success in the solid and semisolid market segment with instrumentation. Of the $1.6 million in hazardous and nonhazardous instrumentation imported by Portugal in 1981, some $355,000, or 22 percent, was supplied by U.S. firms. Growth averaging almost 10 percent per annum is projected for 1981-1987: to $600,000 in 1987 for U.S. sales and to $2.75 million for total imports.

To identify and dispose of toxic and hazardous waste, Portugal spent only $500,000 in 1981, though trade sources hasten to point out that hazardous waste management expenditures are often lumped in with other solid waste costs. By 1987, investment in equipment and instrumentation for hazardous wastes is expected to triple, to $1.5 million. Licensing of new industrial plants already requires firms to identify the toxic substances they will produce and their proposed method of treating them. Similar controls could be applied to existing installations in the future.

So far, demand for instrumentation designed to monitor hazardous wastes arises primarily from field studies and laboratory tests aimed at establishing the problem and devising a system to promote suitable treatment in the future. The $500,000 market is foreseen doubling by 1987, in part because such industrial sectors as textiles and polp and paper will have to raise their monitoring expenditures as a result of the imposition of EEC regulatory requirements. Licensing of additional plants at Sines may also necessitate use of more instrumentation. American manufacturers supplied $100,000 worth of imports in 1981, and are expected to expand their sales to $250,000, or 25 percent of imports, in 1987. Other prominent suppliers include firms from the United Kingdom and Germany.

Sales of instrumentation for nonhazardous solid and semisolid wastes amounted to $900,000 in 1981, and are forecast to climb to $1.75 million in 1987. U.S. firms accounted for imports valued at $255,000 in 1981, and are projected to boost their sales to $350,000 by 1987. Main rivals to American dominance of this market are vendors from the United Kingdom (sales of $250,000 in 1981), France ($155,000), and Germany ($120,000).

In 1981, the $4.85 million market for solid and semisolid waste handling equipment in Portugal consisted exclusively of equipment for nonhazardous wastes. In 1987, while sales of hazardous waste equipment, non-existent in 1981, are forseen emerging and growing to $500,000 by 1987, nonhazardous waste equipment is expected to continue to account for most of the $7.2 million combined hazardous and nonhazardous equipment market. Lisbon has plans to expand its existing French-built solid waste incinerator, but the greatest part of the anticipated increase is likely to result from the installation of collecting and transfer stations, which will require baling and compaction equipment.

U.S. firms sold no solid and semisolid waste handling equipment to Portugal in 1981; nor are they expected to do so in 1987. French, U.K., and German vendors supply most of the market. French-sourced shipments amounted to $1.65 million in 1981 and included liquid recovery systems from Ceca and metals recovery systems from Creusot-Loire. German firms, including Humboldt Wedag and Buhler-Miag, do well with pulverizing equipment. Successful companies from the United Kingdom include Wellman (waste disposal and incineration) and Haigh Engineering (waste disposal).

Noise pollution.—The control of noise pollution is still in its infancy in Portugal; current expenditures are dedicated to measurement studies and initial efforts at controlling noise within factories. The $2.5 million

market is expected to expand to $3.8 million in 1987, representing steady 7.3 percent annual growth.

U.S. firms made a strong showing in the market for noise control instrumentation, which was valued at $1.1 million in 1981. American-sourced shipments of $390,000 made up over 35 percent of sales; by 1987 they are projected to account for $580,000 of the projected $1.7 million market. No third-country rivals came close to matching U.S. sales of instrumentation in 1981. Firms in the United Kingdom accounted for imports worth $230,000, while German companies provided instrumentation valued at $175,000.

Sales of noise pollution control equipment totaled $2.1 million in 1981, all of it imported. Noise control is required as part of the licensing process for new industries in selected areas, notably the Sines industrial complex. Protection of industrial workers against excessive noise is gaining in importance, and a growing number of employers are providing ear protection and building and equipment noise insulation. A steady, if undramatic, 7 percent annual increase in noise control equipment expenditures is foreseen bringing the market to $2.1 million in 1987.

American vendors accounted for just 5 percent of the equipment market in 1981, a share that is not expected to change sharply by 1987, when a U.S. sales volume of $115,000 is anticipated. Largest suppliers to the Portugese market include Germany, with shipments totaling $550,000 in 1981, and the United Kingdom, with $270,000. Leading U.K. competitors include Atlas Copco's British operation (noise and vibration control equipment), Fibreglass (sound insulation), and Spencer & Halstead (silencers and enclosures). In addition, Sweden's Saab Scania does well with acoustic control.

Major Purchasers

The public sector overwhelmingly dominates pollution control spending in Portugal, accounting for virtually all of the market in 1981. Most of these expenditures are made by local authorities or as part of the Sines industrial development, but the public sector also comprises banking, insurance, steel production, most public transport, supply and distribution of electricity, gas, and water, sanitation, harbors and airports, shipbuilding, and production of arms, beer, cement, and petrochemicals. Consequently, the public sector is expected to continue to play a major role through 1987, when it is forecast to spend $27.6 million, or 80 percent of the projected market (see table 4).

Despite the limited scope and pollution control equipment purchases of the private sector in 1981, rapid expansion in expenditures is anticipated. In 1987, the agriculture, textile, pulp and paper, food processing, mining, cork and basketry, and tourism industries are projected to boost their spending on pollution control products to some $6.9 million, representing average growth of 16 percent a year during 1981-1987.

Lacking unifying pollution control legislation, Portugal must rely on a number of Government agencies to implement control measures. The Ministry of Industry, for example, issues water use licenses, while the Ministry of fisheries has at least partial responsibility for coastal and estuarine pollution.

The Sines Project, profiled below, has the nearest thing to a comprehensive, albeit regional, pollution control effort. A Pollution Control Decree gives the governing authority in the area, the Gabinete de Area de Sines, the right to intervene whenever "there appear to be unacceptable levels" of smoke, dust, gas, vapor, odors, or noise, though specific standards are still under development. Trade sources expect precedents being established there to be applied to the rest of the country in the near future.

Local authorities, also profiled below, have the broadest pollution control responsibilities of any level of government. Municipalities bear the burden of sewage treatment to maintain Portugal's water supply and quality, as well as responsibility of handling solid wastes.

Not surprisingly, local authorities also account for the lion's share of pollution control spending some $13.3 million (or 59 percent of the total) in 1981. They accounted for one-half or more of expenditures in every functional category except air pollution. By 1987, they are also expected to buy over 50 percent of air pollution control equipment sold in Portugal, more than doubling their purchases, from $1.15 million in 1981 to $2.5 million in 1987. Several municipalities are considering major wastewater treatment projects; the most significant, for Lisbon, was slated to receive tenders in late 1983.

Other major projects include two wastewater treatment plants planned for the Sines Complex, and described below. Considered part of the chemical industry, Sines accounted for most of the $5.3 million in pollution control spending attributed to that sector in 1981. In 1987, the sector's expenditures are forecast to have climbed over $7.2 million.

Among other sectors expected to be leading purchasers of pollution control products in 1987 are the state-run cement industry and the private sector's textile, food and beverage, and tourist industries. On the assumption that Portugal will have been admitted to the EEC by 1987, the cement industry is expected to step up its purchases of air pollution control hardware sharply to bring its emissions of particulates in line with other European countries. Solid waste handling equipment will also be needed to dispose of particulates removed from plant emissions. EEC accession is expected to generate similar changes in the textile industry, which accounts for over 25 percent of Portugal's exports. Restructuring and the need to limit effluents from more than 1,700 textile

Table 4. Portugal.—Expenditures for pollution control instrumentation and equipment by major user sectors, 1981, and 1987
(in thousands of U.S. dollars)

	1981					1987				
	Total	Waste-water	Air	Noise	Solid, semisolid waste	Total	Waste-water	Air	Noise	Solid, semisolid waste
Government										
Local authorities	13,300	6,100	1,150	1,250	4,800	18,400	8,150	2,500	1,950	5,800
Electricity	720	33	250	50	120	950	400	250	100	200
Cement	350	150	150	—	50	975	200	500	25	250
Chemicals (Sines)	5,250	2,300	1,250	950	750	7,250	3,400	1,400	1,250	1,200
Private Sector										
Agriculture	175	150	—	—	25	250	150	—	—	100
Pulp and paper	200	50	25	50	75	875	150	—	75	650
Textiles	75	50	—	—	25	900	350	—	—	550
Food and beverages	175	25	—	—	150	1,750	1,200	—	50	100
Mining	250	100	50	—	100	250	100	—	50	100
Cork and basketry	350	250	—	50	50	650	500	—	50	100
Tourism	1,150	950	150	50	—	1,550	1,200	—	100	250
Other	475	75	195	100	105	650	200	50	150	250
Total	22,470	10,500	3,220	2,500	6,250	34,450	16,000	4,700	3,800	9,950

Source: Environmental Control Consultancy Services and Bank of Portugal Monthly Statistical Bulletin.

companies is foreseen generating a twelvefold increase in spending for wastewater and solid waste treatment equipment—in 1987 over 1981. In the thriving food and beverage processing industry, a tenfold increase in equipment purchases is predicted (to $1.75 million in 1987), while the tourist industry is expected to maintain its already significant expenditures, particularly for wastewater treatment.

Two public sector end users, local authorities and the chemical industry being developed at Sines, are profiled below. The public sector is so much broader in Portugal than in most other countries. In Portugal neither of these two profiled industries is privately held. Together, local authorities and the Sines industrial complex accounted for over 80 percent of expenditures for pollution control equipment in 1981. And despite sharp spending hikes in several of the private sector industries, the two profiled sectors are expected to make up about three-fourths of the market in 1987.

Local authorities.—Portugal's "municipalities" range in size from hundreds of small inland hamlets to large urban areas such as Lisbon. Since there is no national agency with broad pollution control authority, these local authorities represent the country's first line of defense against pollution. Over 80 percent of their expenditures on pollution control equipment in 1981 went to hardware for wastewater treatment and solid waste. The largest volume of purchases was allocated to wastewater treatment: some $6.1 million in 1981, projected to rise to almost $8.2 million in 1987. All of the major municipalities such as Lisbon, Coimbra, Faro, Oporto, and Setubal, face acute problems of water supply and pollution, and all have been considering their wastewater treatment needs.

A number of medium sized cities are expanding rapidly, and must cope with the attendant environmental growing pains. The local authorities of areas such as Braga, Leiria, and Vila Real are now making decisions on how to handle the wastewater treatment problems of a large population. Several inland towns are studying combined municipal and industrial treatment complexes in an effort to preserve local industries. And in the Smaller towns and villages, where wastewater treatment has in the past been limited to septic tanks, managers are showing a growing interest in compact turnkey treatment systems.

Expenditures of public authorities on solid waste equipment are expected to rise from $4.8 million in 1981 to $5.8 million in 1987. Portuguese politicians recognize the public interest in municipal waste disposal, so the problem receives frequent attention. The bigger cities hope to find suitable incineration techniques, but trade sources also predict continued interest in sanitary landfill. Some of the smaller municipalities are said to be investigating schemes for combined disposal of sewage sludge and household garbage.

The limited volume of expenditures on air and noise pollution by local authorities in 1981 is said to reflect financing of support equipment for studies evaluating these problems. Trade sources believe, however, that the expanded use of incineration in major urban areas will necessitate higher expenditures for particulate control equipment, resulting in sharply higher spending.

Chemical industry.—The manufacture of chemicals and petrochemicals is completely dominated by the massive Sines Project. The Sines zone in southern Portugal is destined to become the largest industrial complex in the country. Launched in 1977, the project is designed around a deep water port, an oil refinery, and a petrochemical complex, all of which are now under construction. The project will also include

medium and light engineering projects, as well as a new urban area to accommodate over 100,000 people.

Unlike most Portuguese industry, plants built in Sines are subject to a Pollution Control Decree enacted for the area controlled by the local authority, the Gabinete de Area de Sines. Total expenditures on pollution control equipment for the chemical industry, which is virtually synonymous with the project, are expected to grow some 5.5 percent a year, to $7.25 million in 1987, representing 21 percent of the entire Portuguese market.

Some $2.3 million of the Sines project's total environmental equipment budget in 1981 was devoted to watewater treatment. By 1987, the figure is expected to rise to $3.4 million. Because of the heavy demands the industrial developments are expected to place on water resources, several wastewater treatment facilities are being built. A plant in the petrochemical complex will be completed in two phases, and will eventually have a capacity of over 25,000 cubic meters (m^3) a day, with a process profile consisting of oil separation, flow balancing, pH control, flocculation followed by flotation, and final discharge into the sea. A second plant is being built at Riberia dos Moinhos to serve the area's expanded population. Its first phase will have a daily capacity of 45,000 m^3, and will be followed by phase two, with a 175,000 m^3 capacity. A conventional treatment scheme has been adopted. Primary treatment will be followed by activated sludge treatment, with primary and secondary sludges being vacuum filtered after chemical conditioning. Final treated effluent is discharged by submarine pipeline and diffusers some 2,500 meters offshore.

Because of the comprehensive environmental policy at Sines, the chemical sector also spends heavily on other kinds of pollution control equipment. In 1987, Sines is expected to spend $1.4 million for equipment to control air quality, $1.2 million for solid wastes, and $1.25 million for noise. The need to remove toxic wastes, especially heavy metals, helps explain increased expenditures for solid waste treatment equipment and wastewater treatment equipment.

Market Access Data

While much of the pollution control instrumentation and equipment entering Portugal is handled by agents and importers, distribution to end-users is ordinarily through engineering contractors. Complete package contracts are common. Leading contracting firms, often with specialized experience in a single functional area, such as air pollution or noise pollution provide a sole point of contact for many buyers, especially small municipalities. Engineering consultants influence purchase decisions, but are less likely to do the actual buying.

All major government contracts, as well as those let by town councils, are put out to public tender. Calls for public tender are announced in the government gazette, in the daily national and local newspapers, and in an Information Bulletin devoted exclusively to listing tender calls and contract awards. Invitations to bid are published in Portuguese, unless the contract is to be financed by a foreign loan. In that case, it must go to international tender, requiring announcement in Portuguese as well as one other language.

Price is said to be an important factor influencing purchase decisions. U.S.-built equipment, which is typically marked up from 65 percent to 115 percent, is considered expensive for many of the relatively unsophisticated applications required by local buyers.

Portuguese import duties, based on the Customs Cooperation Council Nomenclature, range from 10 percent to 40 percent on pollution control equipment. Such equipment is, however, exempt from Portugal's turnover tax. Import transactions in excess of 15,000 escudos (about $175) must be registered in advance and require issuance of an import license.

Individual Portuguese engineers have specific preferences, but standards for any given project are usually determined after negotiations between client and supplier. Pollution control equipment currently sold in Portugal has been designed according to such diverse standards as the German DIN, British BIS, and French FES. Trade sources note, however, that local engineers are studying uniform EEC-wide standards for possible future adoption.

Additional Information

The project officer responsible for Country Market Surveys on Pollution Control Equipment is:

Jammie L. McKay
Market Analysis Branch, Rm. 2012
International Trade Administration
U.S. Department of Commerce
Washington, D.C. 20230

The Survey summarizes a 79-page International Market Research (IMR) report prepared by Environmental Control Consultancy Services in Romsey, England under contract for the U.S. Department of Commerce and reflects the opinions and views of interviewees in Portugal and not those of the Department of Commerce. The IMR report gives considerably more detail on all the points touched upon in the Survey, as well as marketing practices, trade regulations, technical standards, and the names and addresses of prospective customers, potential agents and distributors, trade associations, and trade publications.

For a free copy of the latest catalog of Market Research reports, which lists all Country Market Surveys and selected International Market Research reports, including the one described above, please write to:

International Market Research Services
OIPDD/ITA, P.O. Box 14207
U.S. Department of Commerce
Washington, D.C. 20044